

Future Spectrum Requirements in Africa

WRC-15 Lunchtime seminar

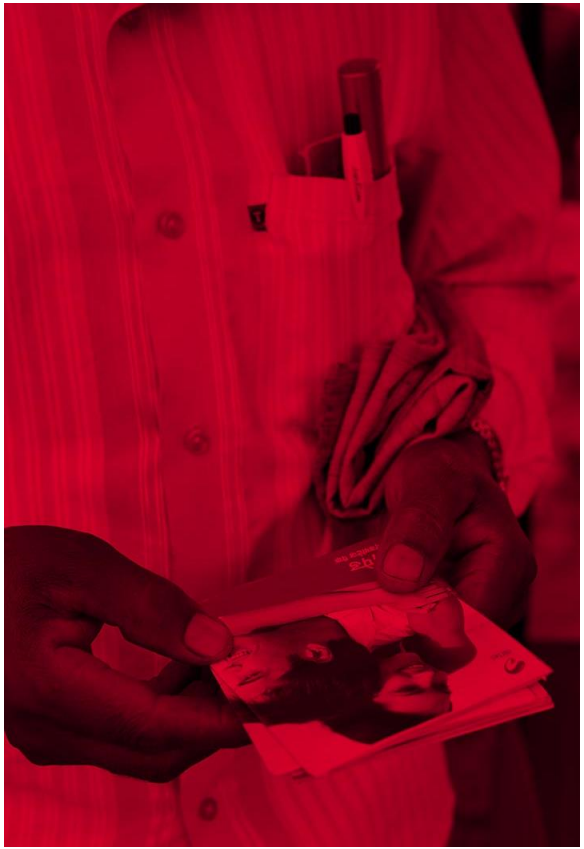
Geneva, 3 November 2015

A mobile operator's perspective
Ahmad Julfar, Chief Executive Officer
Etisalat Group

A vendor's perspective
Shiv Bakhshi, Vice President, Industry Relations
Ericsson

Recommended new mobile bands
Mortimer Hope, Director Africa
GSMA

Q&A, buffet lunch and networking





A mobile operator’s perspective

Ahmad Julfar, Chief Executive Officer
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A vendor's perspective

Shiv Bakhshi, Vice President
Industry Relations
Ericsson

ON ALLOCATING SPECTRUM FOR A CHANGING WORLD



Shiv Bakhshi, Ph.D.
VICE PRESIDENT, INDUSTRY RELATIONS, ERICSSON GROUP FUNCTION TECHNOLOGY

GSMA lunch meeting for African Delegates to WRC 15
Geneva, Switzerland, Nov 3, 2015

POINT OF DEPARTURE





MUTUAL INTERDEPEDENCE

SPECTRUM IS THE LIFEBLOOD OF ALL THAT IS MOBILE

THE FUTURE IS NOT WHAT IT USED TO BE

What is changing in the changing environment: MBB trends

Urban regions
- more cities, and more megacities
- spectrum needs are defined by cities

Mobile multimedia
- video (60%, 2020)
- indoor consumption

Consumer behaviors
- on-demand anytime
- viewing anywhere



Mobile broadband
450 MHz – 6 GHz
information search, video



Terrestrial TV
470 – 694 MHz
linear viewing



Fixed Satellite Services
C-band
TPE demand

WHAT IS CHANGING? IN NUMBERS

What to expect by 2020

11x
growth in smartphone traffic

80%
of mobile data traffic will be from smartphones

60%
Mobile data traffic that will be driven by video



more people will watch streamed on-demand video than linear TV

9.2B
mobile subscriptions worldwide

85%
of all subscriptions will be for mobile broadband

70%
Of the world will have mobile broadband coverage

>90%
global pop will have a mobile phone, 3.7 Bn LTE subscriptions

WHY DO THESE NUMBERS MATTER?

Because all kinds of societal goals – political, economic, developmental – are intrinsically tied to the growth of Mobile Broadband



















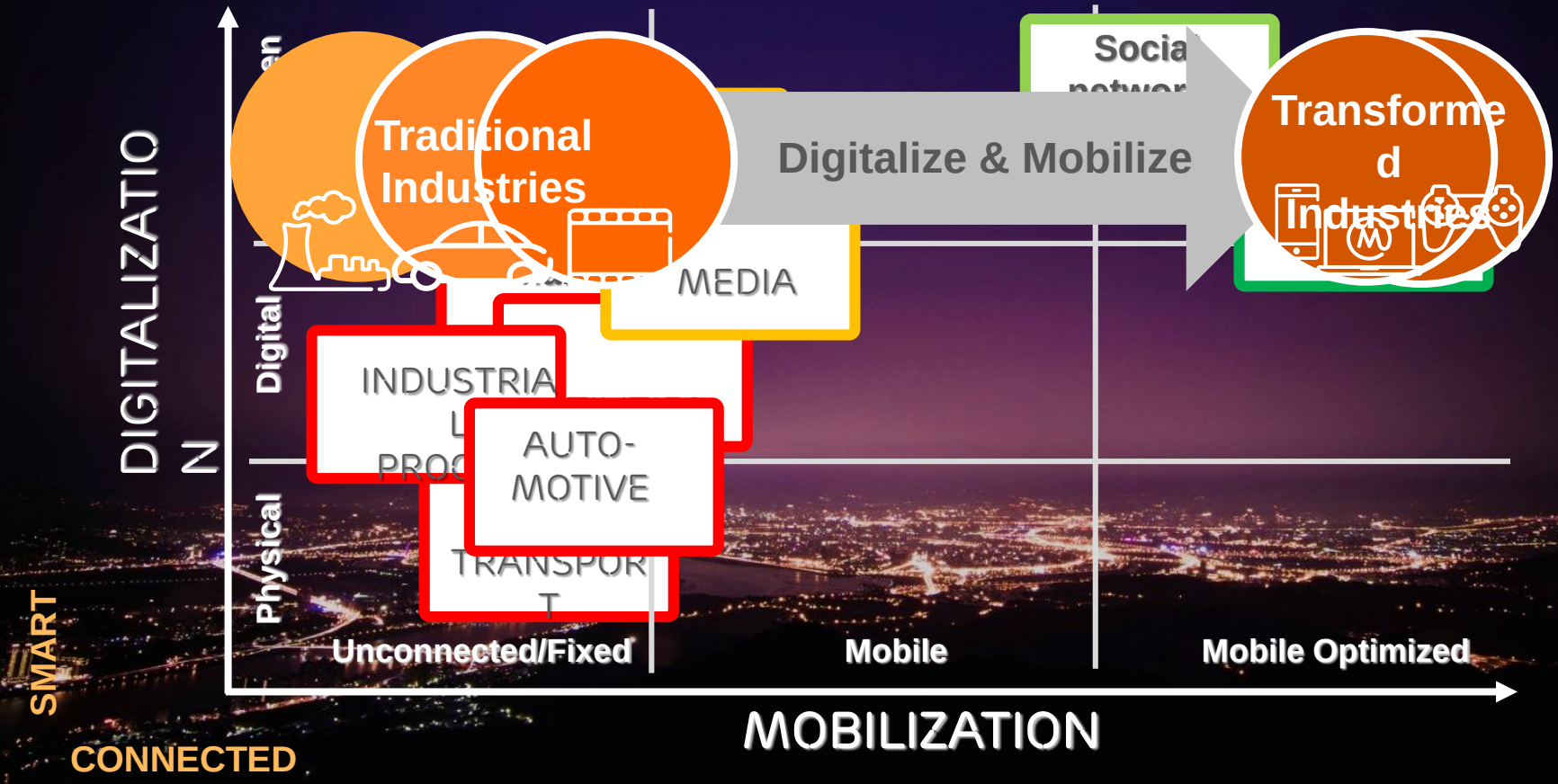




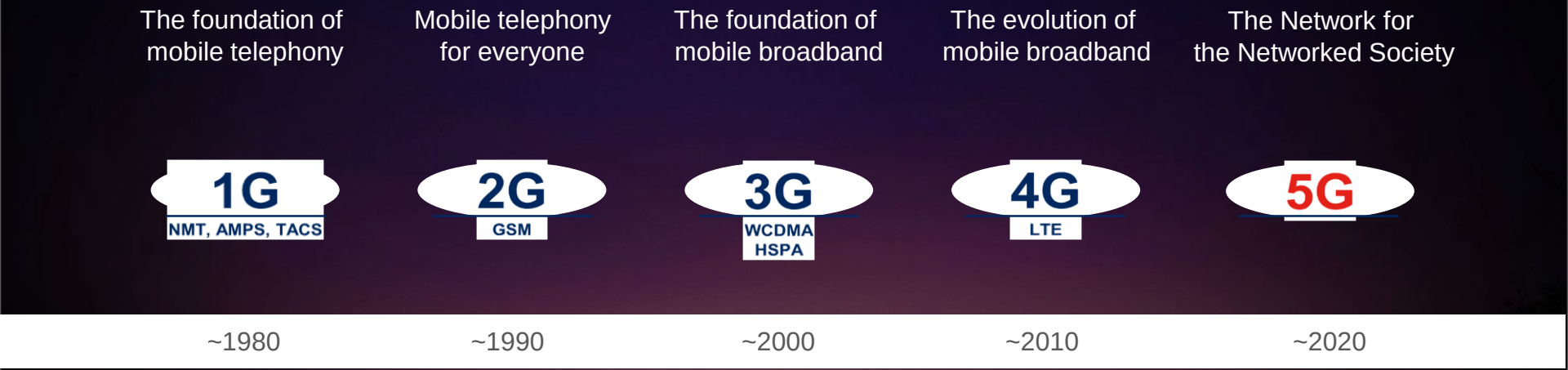



CHANGE HAS ITS RIPPLE EFFECTS
QUANTITATIVE CHANGE
LEADS TO
QUALITATIVE CHANGE
(AND CONCOMITTANT SOCIAL TRANSFORMATION)
CHANGING BEHAVIORS & EXPECTATIONS
OF CONSUMERS
INVITE INDUSTRIES TO TRANSFORM

INDUSTRIES IN TRANSFORMATION



MOBILE GENERATIONS ACROSS TIME

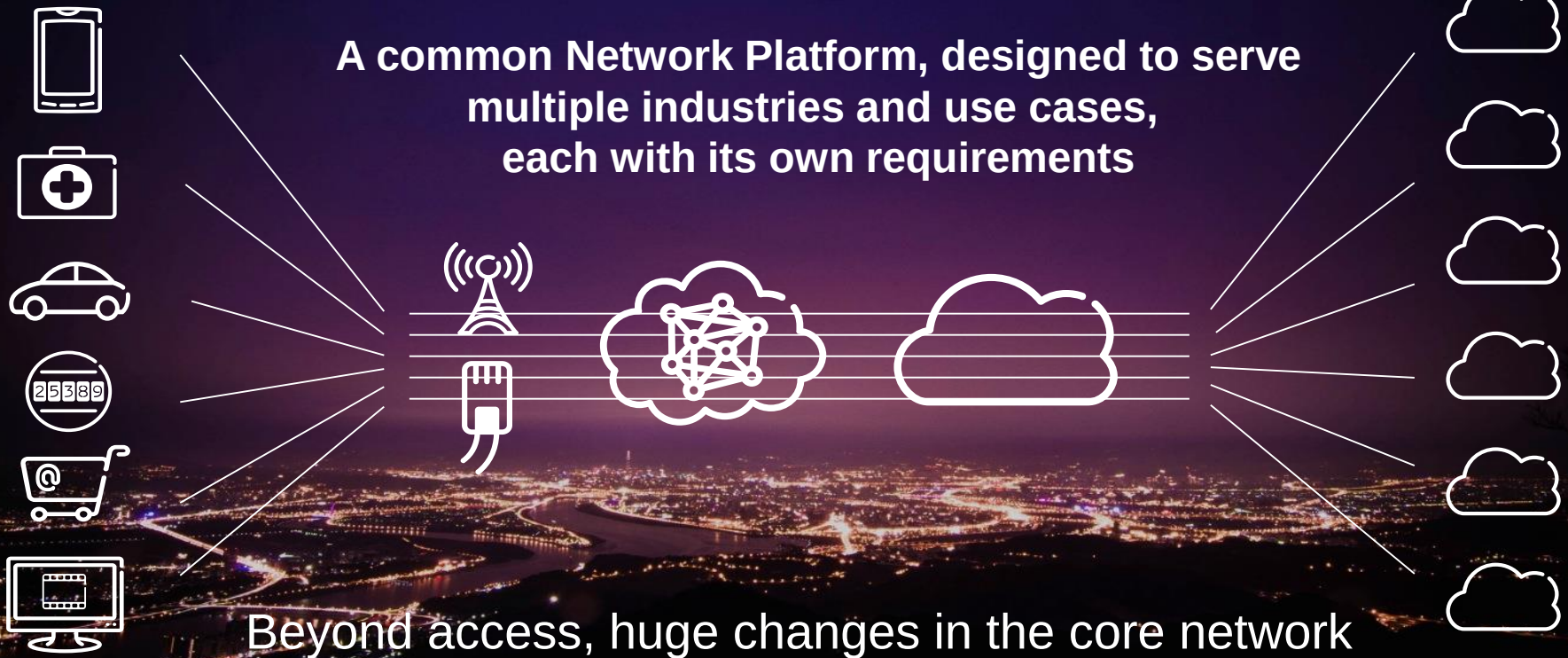


Historically, higher peak data rates, denser infrastructure and more bandwidth have been the hallmark of each mobile technology generation!

Access technologies & new air-interfaces have been the center of attention

5G IS DIFFERENT: A NETWORK PLATFORM

A common Network Platform, designed to serve multiple industries and use cases, each with its own requirements



Beyond access, huge changes in the core network
One network, with dynamic and secure network slices

ICT CREATING SOCIETY BENEFITS

Social progress

Environment progress

Economic progress

Education
Health
Inclusion

Resources
Pollution
Climate change
Waste management

Productivity
Competitiveness
Vertical markets

inclusion



ENABLING CHANGE

technical standardization

infrastructure equipment / devices

high performing networks



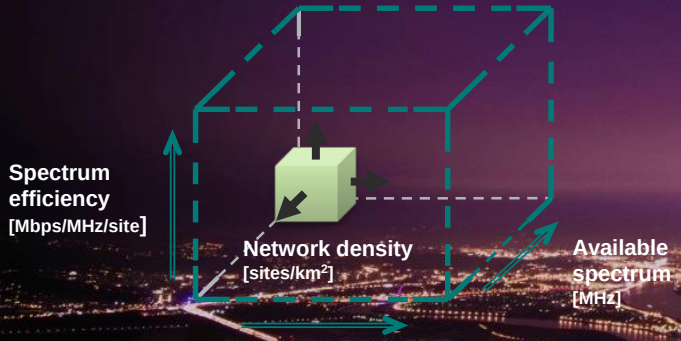
content, including local content

National Broadband Plans (NBPs)

appropriate regulations, and spectrum resources

TRAFFIC GROWTH, AND SPECTRUM

- There are only so many ways to handle growing traffic :
  - Spectrum Efficiency
  - Network densification
  - More spectrum



Industry doing its part on network density & spectrum efficiency

Area spectrum efficiency

Traffic capacity [Mbps/km²] = Available spectrum × Network density × Spectrum efficiency

Policymakers must act to make more spectrum available

MOBILE

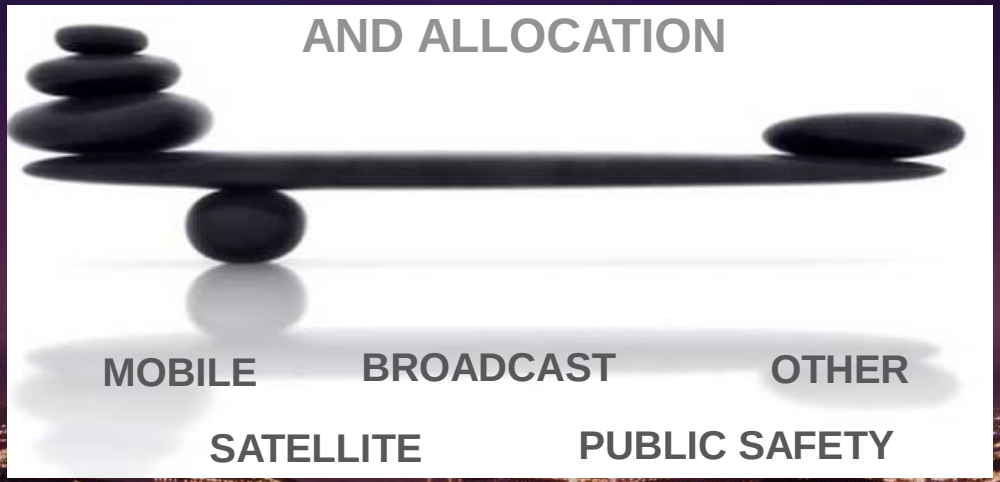
MOBILE ON THE SPECTRUM MAP



PRIORITIES, TRAJECTORIES & CHOICES

NEEDS OF THE SOCIETY

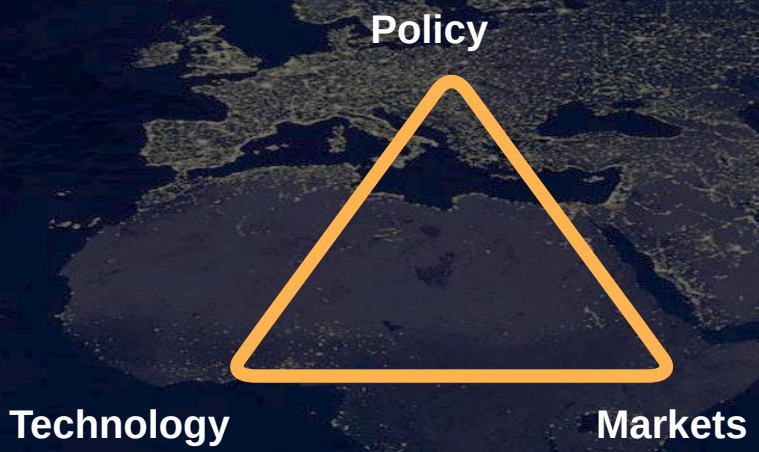
SPECTRUM MANAGEMENT AND ALLOCATION



NEEDS OF THE STATE

Different priorities, technological trajectories, may dictate different choices
But regional/global harmonization should always remain a key consideration

PARTING THOUGHTS



Technology, Policy & Markets stand in mutually interdependent relationship – each is impacted by the others.

Decisions we take here this month will have lasting impact

Time to light up Africa!


ERICSSON



Recommended new mobile bands

Mortimer Hope, Director Africa
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Secure the future of mobile

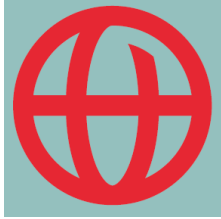
THE FUTURE OF MOBILE BROADBAND IS AT RISK WITHOUT MORE SPECTRUM

- **Mobile traffic is growing faster than anyone's expectations**
- **Agenda Item 1.1 risks not meeting its goal**
  - Goal is to plan for mobile spectrum requirements in 2020-2025 – not today
- **More spectrum is vital to improve services and increase socioeconomic benefits**
  - African 3G/4G subscribers growing from 142 million in 2014 to 370 million in 2020
  - Mobile injected $144bn into the economy in 2014 (5.6% GDP) rising to 221bn in 2020 (7.5%)
- **Supporting higher IMT spectrum demand means lower cost devices in future**
  - Markets who use new bands first will drive the economies of scale for later users
- **Flexibility is essential to allow countries to react to their evolving situations**
  - New bands won't be licensed to operators until governments see clear demand
  - Existing services can continue and be protected through regulatory conditions

GSMA recommended new mobile bands

Sub-700 MHz UHF

(470-694/8 MHz)



The key to the future of widespread mobile broadband coverage

L-band

(1350-1400 MHz & 1427-1518 MHz)



A good mixture of coverage and capacity

2.7-2.9 GHz



A good capacity band that would allow use of existing 2.6GHz cell sites

C-band

(3.4-3.8 GHz & 3.8-4.2 GHz)



Large bandwidth could provide capacity to support high-speed mobile broadband

2.7-2.9 GHz



GOOD CAPACITY BAND THAT COULD USE EXISTING CELL SITES

CURRENT USAGE:

- **Radars for aviation (military and civilian) and meteorological purposes**
  - Small number of radars in fixed areas so band is unoccupied elsewhere
  - Significant potential to use the spectrum more efficiently

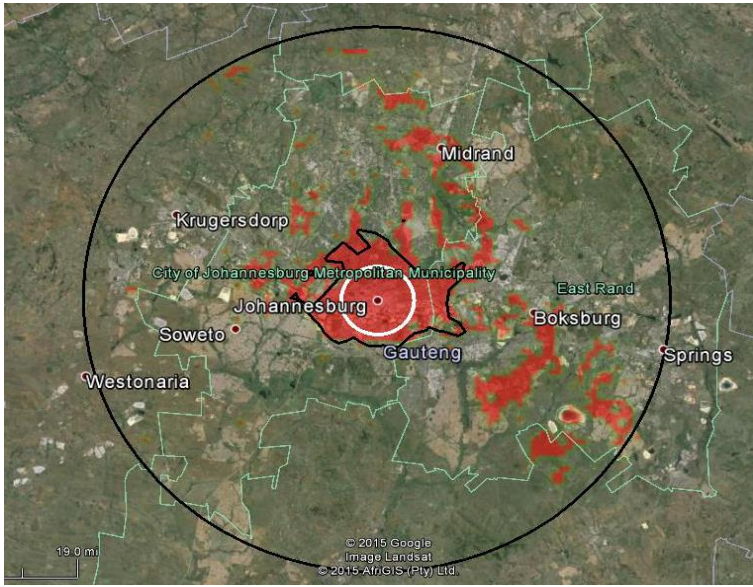
HOW TO ACCOMMODATE MOBILE *IN A PORTION*:

- **All existing radar requirements can be met in a much smaller portion**
  - UK uses radar heavily yet all its radars – and more – could fit in half the band
- **IMT could operate where radar is not used or band could be segmented**
  - ITU studies show large exclusions zones not needed around radar stations

C-band (3.4-3.8 GHz & 3.8-4.2 GHz)

NOT ONE OR THE OTHER: MOBILE AND SATELLITE CAN SHARE THE C-BAND

- **FSS and IMT both provide vital services**
- **They can share based on realistic sharing scenarios**
- **A Transfinite study of Johannesburg shows:**
  - Co-channel sharing analysis shows separation distances in the order of 5km (terrain dependent)
  - Far lower than JTG criteria which concluded 33km
  - In reality IMT could use part of the band in city centres leaving FSS the full band in rural and suburban areas



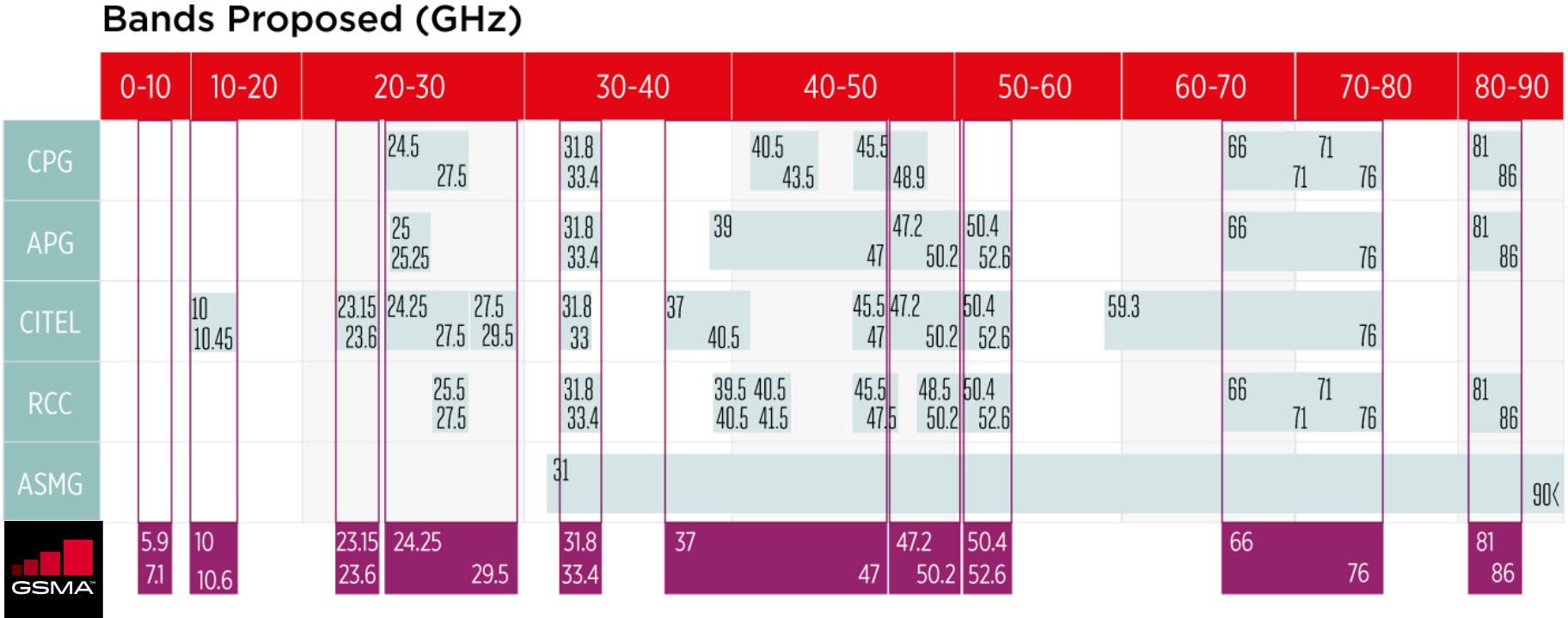
AFRICAN GOVERNMENTS COULD RECEIVE $13 BILLION IN TAX AND AUCTION REVENUES IF 3.4-3.8 GHz WAS ALLOCATED TO MOBILE

EXISTING SUPPORT:
- Africa has about 28 countries in 3.4-3.6 GHz footnote
- Common European IMT proposal for 3.4-3.8 GHz band
- Strong support for 3.4-3.6/7 GHz in Region 2

Enable the future of IMT: AI 10

IMT 2020 WILL RELY ON MUCH WIDER MOBILE BANDS

- WRC-19 Agenda Item needed for IMT identification > 6 GHz




GSMA
Any questions?